16. (new) The method according to claim 15, wherein the number of samples is two and these are analyzed using a method generating a 2-dimensional response according to

$$I(\alpha,\beta)=\sum_{i=1}^{r} I_i(\alpha)c_i I_i(\beta)$$

and the 1-dimensional responses of the components and the ratios between their concentrations in the two samples, (c_i^B/c_i^A) are calculated by solving the equation system:

$$I^A(\alpha,\beta)=\sum_{i=1}^{r} I_i(\alpha)c_i^A I_i(\beta)$$

$$I^B(\alpha,\beta)=\sum_{i=1}^{r} I_i(\alpha)c_i^B I_i(\beta)$$

17. (new) The method according to claim 16, wherein the two samples are generated from one sample.

18. (new) The method according to claim 16, wherein one of the samples is used as standard sample to determine the concentrations of the components in a test sample.

19. (new) The method according to claim 15, wherein a single sample is analyzed using a technique generating a 3-dimensional response

$$I(\alpha,\beta,\gamma)=\sum_{i=1}^{r} c_i I_i(\alpha)I_i(\beta)I_i(\gamma).$$

20. (new) The method according to claim 15, wherein a single sample is analyzed using a technique generating a 2-dimensional response simultaneously as environmental conditions, such as temperature, pressure, illumination and the like, are varied in such a way that the concentration of the components are changed in time:

$$I(\alpha,\beta,t)=\sum_{i=1}^{r} c_i(t)I_i(\alpha)I_i(\beta).$$

21. (new) The method according to claim 15, wherein exactly two data points are collected in one of the dimensions.

22. (new) The method according to claim 15, wherein the multidimensional response is measured by fluorescence or nuclear magnetic resonance.

23. (new) The method according to claim 22 for characterization a test sample by analyzing time dependent spectra, wherein the time relates to time after irradiation, time after mixing of components, time after changing environmental conditions, or time after initiation of separation.

B2 cont'd

24. (new) The method according to claim 22, wherein the test sample is characterized by analyzing two time dependencies, in combination with at least some other dependency selected from the group consisting of energy, wavelength or frequency of radiation.

25. (new) The method according to one or more claims 15, wherein the variations along, at least one of the dimensions, is obtained by varying time, electric, magnetic or electromagnetic field, temperature, frequency modulation or polarization.

26. (new) The method according to claim 25 for characterization a test sample by analyzing time dependent spectra, wherein the time relates to time after irradiation, time after mixing of components, time after changing environmental conditions, or time after initiation of separation.

27. (new) The method according to claim 25, wherein the test sample is characterized by analyzing two time dependencies, in combination with at least some other dependency selected from the group consisting of energy, wavelength or frequency of radiation.

28. (new) The method according to claim 15, wherein the response monitored is broken down to an orthogonal basset e.g., using a principal component division, the number of components (r) in the sample is estimated, and the arbitrary normalized 1-dimensional responses of the components are calculated.